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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/040,717	01/07/2002	Wolfgang Singer	637.0016USU	1778

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EXAMINER

HO, ALLEN C

ART UNIT PAPER NUMBER

2882

DATE MAILED: 06/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/040,717

Applicant(s)

SINGER ET AL.

Examiner

Allen C. Ho

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3-16, 19-21 and 24-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3-8 and 12 is/are allowed.
- 6) ☒ Claim(s) 9-11, 13-16, 19-21 and 24-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 15 is objected to because of the following informalities:

Item (d), line 1, "an exit pupil" should be replaced by --the exit pupil--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 9, 11, 13, and 19 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: an element that illuminates the first raster element.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 9, 11, 13-16, 20, 21, and 24-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Oshino (U. S. Patent No. 5,677,939).

With regard to claim 9, Oshino disclosed an illumination system for lithography with wavelength of ≤ 193 nm comprising: a first optical element (2), which is divided into first raster elements and lies in a first plane, wherein the first plane defines an x-direction and a y-direction, wherein the first raster elements each have an x-direction and a y-direction with an aspect ratio, wherein at least two of the first raster elements have aspect ratios of different magnitude (Fig. 3A).

With regard to claim 11, Oshino disclosed the illumination system according to claim 9, further comprising at least one field mirror (3).

With regard to claim 13, Oshino disclosed the illumination system according to claim 9, wherein the first raster elements are rectangular (Fig. 3A).

With regard to claim 14, Oshino disclosed an illumination system for lithography with wavelength of ≤ 193 nm comprising: a first optical element (2), which is divided into first raster elements and lies in a first plane, wherein the first plane defines an x-direction and a y-direction, wherein the first raster elements each have an x-direction and a y-direction with an aspect ratio, wherein at least two of the first raster elements have aspect ratios of different magnitude (Fig. 3A), wherein the illumination system defines a field to be illuminated in an object plane (6) of the illumination system, wherein the field represents a segment of a ring field (column 19, lines 42-53), and wherein the first raster elements are mirrors.

With regard to claim 15, Oshino disclosed a projection exposure system for microlithography comprising: (a) an illumination system for lithography with wavelength of ≤ 193 nm having: a first optical element (2), which is divided into first raster elements and lies in a first plane, wherein the first plane defines an x-direction and a y-direction, wherein the first

Art Unit: 2882

raster elements each have an x-direction and a y-direction with an aspect ratio, wherein at least two of the first raster elements have aspect ratios of different magnitude (Fig. 3A), and wherein the first raster elements are mirrors; (b) an exit pupil, which partially collects an emission produced by a light source (41) and further guides it to illuminate a field in an object plane (6) of the illumination system; (c) a pattern-bearing mask (6), which lies in the object plane; (d) a projection device (7), with an entrance pupil, which coincides with the exit pupil of the illumination system, wherein the projection device images a lighted portion (BF) of the pattern-bearing mask in an image field of the projection device; and (e) a light-sensitive substrate (8), which lies in a plane of the image field.

With regard to claim 16, Oshino disclosed a method for producing microelectronic components (column 1, lines 14-26), comprising using the projection exposure system according to claim 15.

With regard to claim 20, Oshino disclosed an illumination system comprising: an optical element (2) having a first raster element on a support structure (the optical element) and a second raster element on the support structure (Fig. 3A), wherein the first raster element has a first aspect ratio, wherein the second raster element has a second aspect ratio, wherein the first raster element is a first mirror and the second raster element is a second mirror, wherein the first aspect ratio is not equal to the second aspect ratio, wherein the illumination system defines a field to be illuminated in an object plane of the illumination system, and wherein the field represents a segment of a ring field (column 19, lines 42-53).

With regard to claim 21, Oshino disclosed an illumination system for radiation wavelength of ≤ 193 nm comprising: an optical element (2) having a first raster element in a

plane on a support structure and a second raster element in the plane on a support structure, wherein the first and second raster elements are of different sizes (Fig. 3A), and wherein the first raster element is a first mirror and the second raster element is a second mirror, wherein the illumination system defines a field to be illuminated in an object plane of the illumination system, and wherein the field represents a segment of a ring field (column 19, lines 42-53).

With regard to claim 24, Oshino disclosed the illumination system according to claim 20, wherein the support structure is a raster element plate (the optical element itself is a flat plate).

With regard to claim 25, Oshino disclosed the illumination system according to claim 21, wherein the support structure is a raster element plate (the optical element itself is a flat plate).

With regard to claim 26, Oshino disclosed an illumination system for radiation of ≤ 193 nm comprising: an optical element (2) having a first raster element situated substantially in a plane and a second raster element situated substantially in the plane, wherein the first and second raster elements are of different sizes (Fig. 3A), and wherein the first raster element is a first mirror and the second raster element is a second mirror, wherein the illumination system defines a field to be illuminated in an object plane of the illumination system, and wherein the field represents a segment of a ring field (column 19, lines 42-53).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oshino (U. S. Patent No. 5,677,939) as applied to claim 9 above.

With regard to claim 10, Oshino disclosed the illumination system of claim 9, further comprising a collector unit (51), which illuminates the first plane with the first raster elements. However, Oshino failed to teach that the collector unit completely illuminates all of the first raster elements.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to configure the collector to completely illuminate all of the first raster elements, since a person would be motivated to increase the area of illumination in an object plane.

Allowable Subject Matter

8. Claims 3-8 and 12 are allowed.

9. Claim 19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

10. The indicated allowability of claims 9-11, 13-16, 20, 21, and 24-26 is withdrawn in view of the newly discovered reference(s) to Oshino (U. S. Patent No. 5,677,939).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (571) 272-2491. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Allen C Ho

Allen C. Ho, Ph.D.
Primary Examiner
Art Unit 2882

10 June 2006